Practical 10

EXERCISE 10.1: IDENTIFICATION OF DIFFERENT FERTILIZERS

Objective :

- To impart knowledge to identify different fertilizers used in horticultural crops

Delivery schedule : 02 period

Student expectations/learning objective:

- The characteristic features of different fertilizers for their easy identification

Pre-learning required: Importance of fertilizers in horticultural crops

Handouts/material required/equipments & tools: Paper sheet and pen to note down the instructions, samples of different fertilizers, petri dishes.

Introduction

Any natural or manufactured material, dry or liquid which is added to the soil in order to supply one or more plant nutrients other than lime or gypsum is known as fertilizer. These are industrially manufactured chemicals containing higher nutrient contents in comparison to organic manures and are in soluble form. In India, five types of fertilizers are generally used in crop production.

1. Nitrogenous fertilizers
2. Phosphatic fertilizers
3. Potassic fertilizers
4. Complex fertilizers
5. Mixed fertilizers

Table 2: Characteristic features of important fertilizers.

Fertilizer	Nutrient composition	Characteristic features
Nitrogenous fertilizers: They supply nitrogen.		
Calcium Ammonium Nitrate (CAN)	25% N	It is available in granular form and brown or light grey or white in colour
Urea	46% N	It is white, crystalline organic chemical and soluble in water.
Ammonium sulphate	20.6 % N	It is white to yellowish grey in colour
Calcium nitrate	15% N	It is in prilled form
Phosphatic fertilizers: They contain phosphorus in absorbable form		
Single superphosphate	16% P_2O_5	Ash coloured powder like material or granular grey coloured material
Potassic fertilizers: They supply potassium to the plants.		
Muriate of Potash	60% K_2O	Reddish or dirty white crystalline material
Potassium sulphate	48% K_2O	Dirty white powdery material
Compound fertilizers		
Ammonium phosphate	20: 20	Granulated fertilizer
Mixed fertilizers		
NPK (12:32:16)		Granular in form and brown or ash coloured.

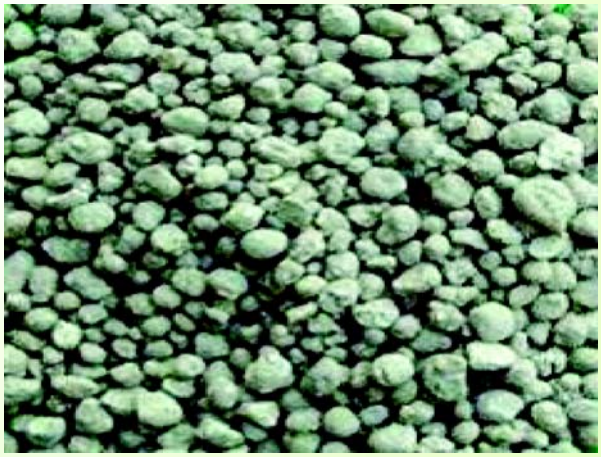
Urea

Calcium ammonium nitrate (CAN)

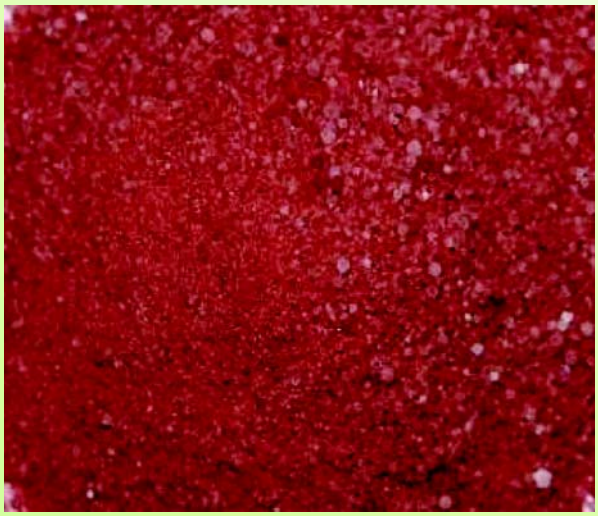
Urea, single super phosphate and muriate of potash are important chemical fertilizer used in horticultural crops. Nutrients are lost from the soil through leaching, runoff, volatilization, fixation by soil or consumption by weeds *etc*.

Ammonium nitrate

Magnesium potassium sulphate



Single super phosphate (SSP)



Muriate of potash (MOP)

Exercise: Identify the given sample of fertilizers and record your observations in the data sheet.

Handouts/material required/equipments & tools: Data sheet and pen to note down the observations, samples of fertilizers, petri dishes, beaker

Procedure/methodology:

1. Spread the fertilizer sample on a piece of paper or in a petri dish. Note its colour. The colour may range from snow white to dark grey.
2. Note the texture of the fertilizer which may varies from powder to globular granules. Some fertilizers have crystalline texture.
3. Observe the hygroscopicity of fertilizer material. Hygroscopicity refers to the absorbance of water vapours from the atmosphere. The hygroscopic fertilizers material usually form small to big lumps while non-hygroscopic fertilizer materials maintain their original texture and do not form any lumps.
4. Test the material for its solubility in water. Put a pinch of fertilizer in a beaker containing water. Stir it and carefully observe whether the fertilizer forms a solution or suspension over a time span of 5-15 minutes. Hygroscopic fertilizers quickly dissolve in water while others take a long time. Some may not dissolve at all and remain suspended in water.

Data sheet

Sample number	Name of fertilizer	Type of fertilizer	Nutrient contents	Specific identifying feature		
				Texture (granular/ crystalline/ powder)	Colour	other
1						
2						
3						
4						
5						
6						
7						

PRECAUTIONS

- Identify each sample separately to avoid confusion.
- Avoid tasting of the samples.
- Handle the fertilisers carefully.